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## IN THE SPECIFICATION

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### Field of the Invention

The invention relates, in general, to bat swing practice, and more specifically to a sound-producing bat swing practice device comprising a hollow outer tube with a handle portion adjoined to the hollow outer tube at one end and at the opposite end a solid plug and metal pin positioned inside the hollow outer tube along with an end cap at the end of the hollow outer tube. This hollow outer tube combination has a hollow inner slidable tube that creates a snapping sound when it travels the length inside of the hollow outer tube and strikes the solid plug, when the bat practice-training device is properly swung.

### Background of the Invention

So-called training devices can be found in the literature. U.S. Pat. No. 5,360,209, by Mollica, entitled "BATTING TRAINING DEVICE" discloses a batting training device, which includes a handle and a weighted member movable relative to the handle along a longitudinal extending rod in response to the acceleration of the batting training device along a portion of a contact hitting swing. U.S. Pat. No. 6,050,908, by Muhlhausen, entitled "TRAINING BAT" describes a training bat consisting of a detachable elongated contact surface member joined with a handle member and a shock absorbing coupler. This greatly reduces the impact forces transferred to the hitter's hands. U.S. Pat. No. 4,898,386, by Anderson, entitled "TRAINING BAT" discloses a training bat comprising a hollow cylindrical bat having a handle and a striking end. A disk is positioned in the interior of the bat at substantially the center of the bat.

Additionally, a plate is positioned in the interior of the bat at the end of the striking end of the bat. An object is slidably coupled in the interior of the bat between the disk and plate. The training bat is essentially shaped in the form of a conventional bat. A weight is coupled within the training bat wherein the weight extends from the disk toward the end of the bat in close proximity to the handle. The weight is coupled to a resilient member so that the resilient member bears weight against the weight to keep the weight from moving. U.S. Pat. No. 4,682,773, by Pomilia, entitled "BASEBALL TRAINING BAT" discloses a bat having a uniform outside

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diameter, the entire length thereof. The bat is essentially an elongated tubular member made of iron pipe material commonly referred to as 3/4-inch pipe. The bat is filled with foamed material. U.S. Pat. No. 4,555,111, by Alvarez, entitled "PRACTICE BAT" discloses a practice bat comprising a handle portion and a weighted end portion interconnected by a resilient spring. When the bat is swung, the momentum of the weighted end portion will cause it to lag behind and then move ahead of a longitudinal at rest axis of the handle portion causing the player's wrists to break or bend. U.S. Pat. No. 4,399,996, by Boyce, entitled "PRACTICE BAT" discloses a baseball practice bat, which includes a head portion and a grip portion. The head portion and grip portion are bridged together via an articulating joint, which provides connected flexure or resilience. Such articulating joint is formed by a steel coil spring, which is embedded in a potting resin such as an epoxy resin with a suitable hardener. U.S. Pat. No. 3,246,894, by Salisbury, entitled "BASEBALL TRAINING BAT OR SIMILAR ARTICLE" discloses a bat having a generally cylindrical tapered barrel portion joined to a handle portion having a flared butt end joined together via a central section. The central section has a small diameter to minimize the hitting area. In one embodiment, the central section is a torsion bar, which converts shock forces such as the impact of the ball on the barrel portion of the bat to prevent imparting of the shock forces to the hands of the batter on the handle portion.

#### Summary of the Invention

A review of the baseball/softball training devices illustrated in the prior art described above shows that none of them is designed to work on a sound or auditory basis where the sound can inform the user if the user is swinging the bat properly. In addition, they are either a standard weight of a typical bat or even heavier in some cases. This limits their use for training purposes as the heavy weight restricts the user's ability to repetitively use the device to condition the user in the proper swing technique.

When hitting a baseball/softball, it is desirable to achieve what is referred to as "full extension" during the swing of the bat. Full extension is accomplished by achieving maximum bat speed at the point where the bat makes contact with the ball. A training aid was needed to demonstrate the concept.

The primary goal was to create a device that would only make a distinct noise, a snapping sound, at the proper point of bat contact with the pitched ball, (i.e., at the point of full extension).

A batter's swing is very fast and thus difficult to visually examine and evaluate, even for an experienced hitting instructor. A person's ears are very accurate at identifying the point where the snapping sound occurs. This ability to identify where the snapping sound occurs, and therefore where full extension occurs, promotes a muscle memory teaching point for hitters.

A second goal was to create a lightweight device. Repeated swings with a standard weight bat can produce muscle fatigue and possibly even injury. Repetition in a fatigued state does not build the proper muscle memory, so it was important that the training aid be lightweight.

It is a major object of the invention to provide a method and means for meeting the above need. A batting practice device according to the present invention, as expressed in general terms, includes a specific combination of elements comprising: 1) a hollow outer tube with a handle portion abutting said hollow outer tube and into which said hollow outer tube inserts; 2) a solid plug affixedly attached inside of said hollow outer tube at the end opposite to said handle by means of epoxy glue and a steel retaining pin and with an end cap covering said solid plug and attached to the end of said hollow outer tube by means of epoxy glue; and 3) a hollow sliding inner tube positioned inside said hollow outer tube, such that said hollow sliding inner tube may slide the length of said hollow outer tube between said foam rubber handle and said solid plastic plug.

Expressed in terms more akin to a mechanical viewpoint, the batting-training device of the present invention provides:

1. A lightweight training device for perfecting a batting swing such that the user can grasp the concept of full extension during the swing of the bat;
2. A training device that produces sound when the user attains full extension; and
3. A training device, which produces a sound that informs the user when full extension is achieved at the optimum time and location (i.e., out in front of the body).

#### Brief Description of the Drawing

Figure 1 is a perspective assembly view of the invention.

Description of the Invention and of Preferred Embodiment

Referring to Figure 1 and the prior description, it will again be noted that the bat-training device of the invention comprises six parts, namely (i) a handle portion (A), (ii) a hollow outer tube (C), (iii) a hollow inner tube (B), (iv) a steel pin (D), (v) a solid plug (E), and (vi) an end cap (F).

Hollow outer tube (C) is intended to be of lightweight material and uniform diameter and of a length approximating that of most bats. The handle portion (A) has at its inner end a slightly larger inner diameter than the outer diameter of the hollow outer tube such that the hollow outer tube can be inserted into the inner end of the handle portion. The handle portion (A) is made of material, which enables it to be easily grasped and also is lightweight and of length approximately equivalent to the length of most bat handles. In the illustrated embodiment, solid plug (E) is illustrated as having a hole drilled lengthwise through it. This solid plug (E) is positioned at the end of hollow outer tube (C) opposite to handle portion (A) and affixed to the inner portion of hollow outer tube (C) by means of glue. A steel pin (D) is inserted into drill holes through hollow outer tube (C) and solid plug (E). An end cap (F) covers the end of hollow outer tube (C) at the end opposite to handle portion (A). Inside of hollow outer tube (C) is placed a slidable hollow inner tube (B) of outside diameter slightly less than the inner diameter of hollow outer tube (C) which permits slidable hollow inner tube (B) to slide the interior length of hollow outer tube (C) between the inner end of handle portion (A) and solid plug (E) with steel pin (D).

In the preferred embodiment of the invention hollow outer tube (C) is made of Schedule 40,  $\frac{3}{4}$ " PVC tubing, which is cut into 32-inch lengths with square ends. Hollow inner tube (B) is made of PEX pipe or plastic hot/cold water pipe, which is cut into 3-inch lengths with square ends. Solid plug (E) is made of Grade 1, PVC,  $\frac{3}{4}$  inch diameter solid rods, which are sanded to abrade the surface to increase adhesion when glued. These rods are then cut into 1.25-inch plugs with square ends. Solid plug (E) is illustrated as having a 1/8-inch hole drilled lengthwise through it. Epoxy glue is applied to the inside of one end of the hollow outer tube (C) and the solid plug (E) is inserted into the end of hollow outer tube (C) and twisted to spread the glue evenly. Solid plug (E) is pushed up into the tube approximately  $\frac{1}{4}$  inch. This creates an air gap between the plug and the end cap (F). Steel pin (D) is made of 3/32 inch steel rod, which is cut into 1.05-inch lengths with square ends. A 3/32-inch hole is drilled 5/8 inch from the solid plug

end of hollow outer tube (C). This drill hole is perpendicular to hollow outer tube (C) and passes through both sides of hollow outer tube (C) and through the centerline of solid plug (E). Steel pin (E) is pushed through the drill hole. The epoxy glue and steel pin (D) prevent solid plug (E) from coming loose. End cap (F) is made of standard, off the shelf,  $\frac{3}{4}$  inch PVC end cap, which is glued on the solid plug (E) end of hollow outer tube (C). Hollow inner tube (B) is made of PEX pipe or plastic hot/cold water pipe, which is cut into 3-inch lengths with square ends. Hollow inner tube (B) is inserted into hollow outer tube from the handle end (A). Handle portion (A) is made of foam rubber and is pushed on the open end of hollow outer tube (C) until seated.